AGRICULTURE TECHNOLOGY PROGRAM (AGTECH)
ANNUAL REPORT IV (OCTOBER 2013- SEPTEMBER 2014)

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DISCLAIMER

ACRONYMS

AI	Artificial Insemination
B2B	Business-to-Business
GOT	Government of Turkmenistan
HH	Household
IPM	Integrated Pest Management
LN	Liquid Nitrogen
LNG	Liquid Nitrogen Generator
LOI	Letter of Invitation
MFA	Ministry of Foreign Affairs of Turkmenistan
MoA	Ministry of Agriculture of Turkmenistan
PMEP	Project Monitoring & Evaluation Plan
PPE	Personal Protective Equipment
SLU	State Livestock Union
TOT	Training of Trainers
USG	United States Government
WTO	World Trade Organization

CONTENTS

OVERVIEW OF ACCOMPLISHMENTS FOR YEAR 4

This report summarizes activities conducted by Weidemann Associates, Inc., A Crown Agents USA Company, in implementing the Agriculture Technology Program (AgTech) for Turkmenistan during the period of October 2013 through September 2014.

Overall, the project has observed continuous growth in crop and livestock production, which resulted in a task order contract extension through February 2015.

Despite the lack of Turkmen Ministry of Foreign Affairs' (MFA) approvals for project activities, the Project continued to push forward for increased accessibility to training and advertising tools in order to promote best practices and celebrate the project's widespread impact.

In the Second Quarter (Q2), the project developed a new strategy for moving forward with project activities despite approval delays from the MFA. Project highlights from this quarter focus on training extension services in collaboration with the State Associations in Turkmenistan, such as the Agriculture University and the State Livestock Union (SLU). In collaboration with the Turkmen institutions and the Government of Turkmenistan's (GoT) support, the Project completed two international STTA activities on World Organization for Animal Health (OIE) Compliance and a seminar on the Sanitary and Phyto-Sanitary (SPS) measures that apply to the World Trade Organization (WTO). Additionally, the second quarter marked a milestone event: the calving of the first project heifers that were born as a result of artificial insemination (AI) activities during the Project's second year.

In the third quarter (Q3) the project witnessed a significant increase in GoT's support for seminars and extension training activities. With an increased interest from the MFA, AgTech designed and implemented three STTA activities in collaboration with the State Universities, the Ministry of Agriculture (MoA) and the SLU. The project also completed a month-long US based pilot training for a small group of Turkmen AI specialists. The trainings took place on a number of different farms in Davis, California, where the participants were able to improve their skills on pregnancy detection in cattle.

During Q4, AgTech revised its yearly work plan and submitted a realigned budget. In the meantime, the project is preparing for close out, executing the approved demobilization plan which entailed a Management visit to the field in preparation for the disposition plan and project strategy revisions. By the end of the quarter, AgTech met or exceeded PMEP annual targets in four of its total seven indicators, despite restrictions placed on travel, monitoring & evaluation, and training activities. Cumulatively, the project is on schedule to complete its deliverables. With the support from the private sector partner, Chevron, the project continues to increase capacity development for veterinarians and farmers to transform the dairy industry in Turkmenistan and support the high local demand for meat and dairy products.

The Project maintains its focus on training extension services and business development in year five, in order to ensure sustainability and market linkages for bolstering growth in production are achieved following the project's close-out. Extension services, capacity and business development activities will ultimately increase farmer incomes, production capacity and provide adequate food security for the region.

Following USAID's notification on July 29, 2014, the contract's ceiling price has been reduced to the obligated amount of $4,074,491, from the previous ceiling price of $4,672,280 due to USAID budget restrictions. As of September 30, 2014 the project estimates that $3,401,927.90 has been spent of the obligated $4,074,491 funds.

PMP TARGETS AND DEVIATIONS:

Performance Indicator	Performance Indicator Definition	Year 4 Proposed	Year 4 total	Project Total Proposed	Project Total
50% increase in HH income	*Horticulture HHs and farms increasing income by 50%*	*500*	*454**	*2000*	*1242**
	Livestock HHs and farms increasing their income by 50%	*500*	*N/A***	*N/A*	*N/A***
Person hours of training completed in private sector productive capacity supported by USG assistance	*Number of hours of training completed by beneficiaries and training participants, disaggregated by gender*	*1600*	*2355*	*4600*	*6147*
Farmers, processors and others who have adopted new technologies or management practices	*Number of beneficiaries and training participants using new technologies or practices as introduced by the project, disaggregated by gender and region*	*250*	*1160*	*1550*	*4044*
Quantity of produce grown and/or sold	*Farmers, buyers or labs are using AI, improved feed, vet services, greenhouses, drip irrigation, grading, post-harvest packaging practices training*	*Baseline + 300 %*	*Baseline +164% **	*Baseline + 300 %*	*Baseline +164% **
Value of produce sold to local and international markets	*USD value of goods in livestock and horticulture sector disaggregated by product and veleyat*	*Baseline + 50%*	*Baseline +197 %**	*Baseline + 50%*	*Baseline +197%**
Number of agriculture-related firms benefiting directly from USG supported interventions.	*Number of input providers and buyers strengthened to provide farmers with necessary inputs.*	*300*	*5*	*520*	*95*
Number of greenhouses constructed or improved	*Number greenhouses constructed and/or renovated in each veleyat*	*50*	*61**	*300*	*355**
Land under improved technologies or management practices	*Indicates the number of ha under greenhouse or livestock project activities (existing and new land).*	*200*	*2.2**	*1300*	*3.2**

* Due to limitation set by the MFA gathering information and travelling to the fields was impossible after May 2014. Therefore indicators given on the tables are taken from April and May months for Mary and Lebap regions, and April, May and June for Ahal region.

** Upon further evaluation in association with USAID, this is no longer a viable indicator. Due to the remote and sparse location of many livestock households, documenting all newborn calves remains one of the main challenges. Another major challenge is poor record keeping, if any, by farmers. Farmers scarcely record increases in milk yields and income as a result of increased use of AI services and improved breeds.

A full description of the PMEP results by indicator is attached as an annex to this report. In light of the restrictions, further data collection will be conducted in Year 5 to project's best abilities.

PROJECT ACTIVITIES AND OBJECTIVES

In order to target USAID's overall objectives, AgTech adapted to the environment in Turkmenistan and designed activities that would increase agricultural productivity and farmer incomes. The activities included transferring technology and information to the local input providers, farmers, and households, all in support of strengthening the horticulture and livestock sectors.

In Year 4, horticulture component objectives have included trainings to introduce new technology and practices and supporting lead trainers and farmers in their respective velayats (regions). Component results have been generally strong. This year, the MFA requested the project to focus on carrying out seminars and trainings for State institutions. Therefore, the Project organized seminars and trainings on drip irrigation technologies and forage crop development. The Project also focused on disseminating knowledge and training on soil management, greenhouse management, pesticide application and Personal Protective Equipment (PPE) use to the greenhouse owners and house hold (HH) farmers. The project partners and extension service agents were provided with booklets, developed by the project, for distribution that illustrated proper greenhouse construction, production and management techniques both in Russian and Turkmen languages.

> **NEXT STEPS:**
>
> *The Project will continue to focus on extension services, capacity and business development via seminars, third country training and a conference.*
>
> *The Project has made peperations for project close-out and will execute all the activities In Year 5, prior to February 27, 2015*

Livestock component activities have also focused on extension services at the farm and household level, in order to increase the number of beneficiary farmers. Based on pilot activities in Year 1 and Year 2, AgTech has demonstrated the impact of feed and herd management techniques on milk production. AgTech continues to closely examine activities for improving animal feed production to support healthier, more productive herds. In Year 4, the project was able to complete forage crop management seminars, cattle management trainings, pesticide use trainings, international standards seminars and continue to create, produce and disseminate booklets and multimedia of various subject matters. The Project continues to push for increased accessibility to training and advertising tools to promote best practices and celebrate the project's widespread impact.

AgTech also continues to consult with international breeding specialists to identify new breeds to introduce to the market. In particular, the project recognizes the high local demand for beef and dual purpose breeds. The number of cows inseminated by project AI specialists has reached 5,534. In Year 4, the project procured 5,000 doses of bovine semen from World Wide Sires, including Jersey, Limousin and sexed female Brown Swiss and Holsteins, for artificial insemination (AI) extension training. The Project introduced new breeds were based on high levels of adaptability and efficient milk production capabilities (i.e., less food intake for optimal dairy output). Results have shown that cows born using project supplied semen have a much higher average milk yield of 15.7L than the base average milk yield of 8L.

LIVESTOCK COMPONENT

Supporting Artificial Insemination (AI) centers

AgTech planned to create an AI Centre with the support of the local Government in the Lebap region. A building for the center was identified and renovated by the Turkmenabat Veterinary Service. However, as a result of the changes in the GoT rules and regulations in relation to foreign technical aid, the efforts put forth for establishing the AI Centre in Lebap had to be redirected towards supporting local entrepreneurs interested in AI business. The Project has identified four AI license candidates in Lebap, Ahal and Dashoguz region and assisted them with completing all necessary forms and paperwork. The candidates are currently going through the application process with the State Livestock Union (SLU).

Throughout the year, AgTech has continued to provide support to existing AI Centers in Ahal, Mary and Dashoguz. The Project is providing them with marketing and promotional material, including AI booklets, leaflets regarding newly introduced breeds and contact numbers of all active AI specialists in their respective regions. The Project has also provided AI Centers with a small amount of newly introduced beef breed and sexed semen doses to support their activities. In addition, AgTech notes important changes of all AI Centers in order to keep farmers and AI clients aware of developments in their region.

CHALLENGES:

• The SLU still has not fully developed or finalized requirements for the AI licensing process and procedure. In view of the current time period and decision criteria for issuing AI licenses for applicants by the SLU, the process development is uncertain.

• As a result of the changes in the GoT rules and regulations in relation to foreign technical aid, the efforts put forth for establishing the AI Centre in Lebap had to be redirected.

SUCCESSES:

• The project identified and assisted four (4) entrepreneurs in the Lebap, Ahal, and Dashoguz regions in completing and submitting AI trade license applications to the State Livestock Union (SLU). The project believes these applications are currently under consideration, with a decision potentially forthcoming by the end of 2014.

Breeding Improvement: Breeding Supplies and AI Training

Year four bore great success in breeding improvement activities for the USAID AgTech Project. Throughout the life of the project, AgTech has been working with farmers to increase milk production and calving in heifers. The milk production increase in heifers is designed to demonstrate to small-holder farmers the economic benefits of AI and its best practices, which is expected to result in a surge of demand for AI services among rural households. In this effort, AgTech trained more than 60 AI specialists across the country and provided them with not only necessary tools and genetic material, but with assistance in advertising their services to livestock farmers in order to increase awareness of AI breeding options.

By the end of Q4 of Y4, the number of cows inseminated by project AI specialists had reached 5,534. While project staff have been unable to visit the local farms in the velayats, primarily due to remote locations of the households and new local regulations, major increases in milk production have been reported from project born cows. Up to an 80-90% increase in milk production was reported by 26

livestock farms from cows born as a result of AI project activities. The project AI specialists have also reported an increase in the number of newborn calves. While the project cannot determine the exact number of calves born from project AI assistance, estimates are around 1,674 calves, though the actual number could be double the estimate. The Project expects the number of the Project produced heifers to increase tenfold by the end of Project's activities. This achievement would exceed Project's expectations.

Additionally, the introduction of other breeds such as Jersey, Limousin and sexed female Brown Swiss and Holstein proved to be beneficial. In order to create an initial demand for beef

Ahal farmer with project AI calf in Q1

breeds and female sexed semen, AgTech has regularly provided each of the active AI specialists with a small amount of Limousin and sexed semen doses (15-20 doses) as compensation for their efforts in tracking and recording AI activities and new born calves in their respective regions. This practice also captured the full potential of the local AI service market for project trained AI specialists and further contributed to the popularity of AI services as a cattle breeding method among livestock farmers. Along with emerging interest and support of the AI activities from the State, triggered by the Project's activities, AgTech believes that AI business and services will have a chance to not only continue in Turkmenistan, but to expand and flourish in the long term. Nonetheless, this will primarily depend on the GoTs ability to leverage its support for the livestock sector.

CHALLENGES:

- Due to the remote and sparse location of many livestock households and farmers' poor record keeping remains a challenge in documenting all newborn calves. The Project estimates that the number of cows born, as a result of Project AI activities, is 2-3 times greater. The Project also only recorded milk yields for 26 heifers due to difficulties in obtaining the necessary data.

- There are many changes at the policy level regarding State registration of foreign technical aid. According to the new decree, any foreign technical and financial aid that is provided to recipients by donor organizations will be considered a grant by the local authorities and will require local registration. Based on the gathered information, the Project believes it would be difficult to register project activities and procurements based on the new regulations. Nevertheless, the project has achieved many successes and is continuously revising its strategy to adapt to new conditions.

SUCCESSES:

- AgTech Program also created a network between entrepreneurs, advisors and experts on AI. The network has become an invaluable resource for overcoming challenges encountered in AI. Without the network, farmers would not have readily available access to information that helps improve their business ventures and farms.

- The much awaited event has occurred: project heifers produced milk. The results from project heifers are impressive, with an 80%-90% increase in milk production alone. Average milk yields of the 26 cows the Project was able to track have almost doubled. Additionally, according to project monitoring figures, by the end of the project (February 2015), it is expected that about 200 project heifers will calve.

- AgTech provided AI services have also contributed to the demand for higher quality beef breeds. The feedback received from project AI specialists indicate that cattle farmers have become increasingly aware of the benefits of high quality cattle breeds and many of them are prepared to pay premium for top quality semen.

- The Project procured and introduced new breeds of cattle including Jersey, Limousin (beef breed) and female sexed semen for Holstein and Brown Swiss breeds. The sexed semen is intended to increase the number of female calves to accelerate impact on milk production and diversification of the genetic pool.

- Furthermore, a local owner of veterinary pharmacy and a long-term project collaborator, Mr. Ovezgeldi, recently imported 30,000 doses of Bro-estrophan (a heat inducing hormone in cows) as a result of an increase in local demand. He believes this demand was directly stemming from the increased popularity of AI services among cattle farmers.

- The number of cows inseminated by project AI specialists had reached 5,534.

Animal Health Improvement

In Year 4, AgTech has carried out a number of seminars and trainings on livestock management and the World Organization for Animal Health (OIE) requirements for veterinary and laboratory specialists from the Central Laboratory of the State Veterinary Service and the State Equine Association of Turkmenistan.

Participants of the OIE seminar in May 2014

The first part of the seminar provided introduction to the project planned international consultancy on OIE compliance for the State Veterinary Service was led by the project's local Agriculture Extension Specialist. The event took place at the Central Lab of Veterinary (Ahal region). A Power Point presentation was prepared by the project specialists to illustrate the content of the seminar. Topics covered included an introduction to OIE objectives, structure, and recommendations. OIE's relationship with other similar organizations (including WTO) was included as part of the discussion.

The Project's short-term international consultant and the regional director of OIE in Eastern Europe and Central Asia, Professor Kazimieras Lukauskas, continued the OIE activity at the end of March. During the 3-day training seminar at the Central Laboratory, the laboratory specialists were trained on the procedures and disease testing methodologies for a number of animal diseases in compliance with the OIE requirements. At the end of the training, participants were awarded certificates on completion of OIE

training, which were signed and presented to participants by the USAID Turkmenistan Country Director Brandy Witthoft and Professor Lukauskas.

As part of the AgTech activity and upon request from the local government, Professor Lukauskas also held a number of high profile meetings with the Minister of Turkmen Equine Association and with the head of the International Department of the Ministry of Agriculture of Turkmenistan. Dr. Lukauskas discussed the development of Turkmenistan's livestock sector, equine industry, improving veterinary services and capacity building for the local laboratory specialists.

Additionally, to support sustainable best practices in animal health, the Project completed a seminar on livestock management and development lead by the former Sr. officer of the Animal Production and health division of Food and Agriculture Organization (FAO) of the United Nations, Dr. David Ward. The project received positive reviews from the participants, prompting the Project to consider recommending a conference to the MFA on selected topics relating to the livestock sector.

SUCCESSES:

- AgTech has carried out a presentation seminar on the World Organization for Animal Health (OIE) for veterinary and laboratory specialists from the Central Laboratory of the State Veterinary Service and the State Equine Association of Turkmenistan.

- The Project sent a short-term international consultant on OIE, the regional director of OIE for Eastern Europe and Central Asia, Professor Kazimierias Lukauskas, to complete the seminar on OIE compliance for the State Veterinary Service. The activity was such a success, that the local government requested Dr. Lukauskas to meet with the Minister of Turkmen Equine Association and the head of the International Department of the Ministry of Agriculture of Turkmenistan.

- The Project retained Dr. David Ward, a Senior Officer (former) of the FAO, to lead a seminar on international best practices in the areas of livestock management, effective breeding, feeding techniques, and veterinary care procedures. Dr. Ward offered tailored recommendations that accounted for the local conditions in Turkmenistan and will be helpful in ensuring sustainability following the Project's closure.

US Based AI and Heat Detection Training

In line with the Year 4 and Year 5 Work Plan, AgTech completed a month-long US based pilot training in April 2014 on advancing AI and heat detection skills. By working on US commercial farms alongside dairy experts on a daily basis, the participants were expected to become experts beyond the level achievable on smaller dairy farms in Turkmenistan.

The trainee selection was designed for those who would benefit the most from exposure to new technology; i.e. AI practices and training on a large number of heads of cattle. These individuals

Ultrasound machine used in the US based AI and Heat Detection Training

were identified as the most advanced practitioners in bovine reproduction in their respective velayats. The objective of the training was centered on advanced technology and regular exposure to a significantly higher number of heads of cattle than available on farms in Turkmenistan. The training practice and

instructions were designed to refine the participants' skills, allow them to master their craft and ultimately, help improve the human capital of the Turkmen livestock industry.

Two-thirds of the training was dedicated to manual palpation of animals in order to identify cows in estrus and the duration of pregnancy. In addition, a number of other activities were performed on a daily basis, including observation of or participation in 5 - 10 calving's per day and 25-35 inseminations. Each trainee was also equipped with an ultrasound that was brought to Turkmenistan at the end of the training, for veterinary use in the velayats.

The lead trainer, Dr. Thomas Graham, emphasized that the dual training allowed for an accelerated learning curve, even for experienced professionals. The training helped the trainees visualize the cow using the ultrasound machine, while using tactile senses to detect a cow's pregnancy status. The intensity of the training ensured retention and sustainability of the high-tech

The two trainees at a dairy farm in Davis, Ca. in Q3

equipment use. These improved breeding practices were expected to continue in Turkmenistan with other AI specialists.

CHALLENGES:

- The US based training schedule was quite standard for U.S. farm activities. However, the training proved to be challenging for the participants who have never set foot on such vast dairy commercial farms.

SUCCESSES:

- The Project organized a pilot training unlike any other. AgTech provided the opportunity for Turkmenistan's leading veterinary experts to train on US commercial farms and hone their expertise with the use of advanced technology and techniques practiced in a setting unavailable in Turkmenistan

- The participants confirmed that the pilot training helped to increase their ability to detect pregnancy via the palpation method. Instead of detecting within 90 days of gestation, the participants were able to detect within 35-40 days of gestation.

- Each participant reported a better understanding of how to operate the ultrasound equipment and understood the importance of its utility.

- These achievements symbolize a significant step forward for the Project and its beneficiaries. The improved techniques which permit the participants to detect early pregnancy and more accurate insemination allow for a reduction in time between the gestation period and maximization of milk production.

HORTICULTURE COMPONENT

Greenhouse Reconstruction

Through greenhouse improvements, AgTech has been assisting small household farmers in maximizing incomes with least cost investments. The affordability of greenhouses enabled farmers to reinvest in their business, build subsequent greenhouses and/or expand the size of their plots where possible. In the project's first year, 70 greenhouses were either built or renovated to the specifications highlighted during project seminars. The main goal was to affordably create a more productive environment given the same small plot of land. During Year 2, an additional 124 greenhouses were built or improved. Year 3 saw an additional 100 greenhouse constructions and renovations. Finally in the past year, the project saw an additional 61 greenhouses, bringing the project's cumulative total to 355 in the four years of project activities.

New greenhouse construction in Lebap in Q1

Despite the achievement, in 2014, the Ministry of Foreign Affairs of Turkmenistan placed restrictions on training activities outside of the Ahal region and encouraged collaboration with government institutions. Therefore, in Year 4 the project worked with small household farmers via extension trainers and conducted several seminars for representatives of the Ministry of Agriculture of Turkmenistan, lecturers and students of Turkmen State Agricultural University, representatives of the Water Resources Ministry of Turkmenistan, and the Food-processing Association of Turkmenistan. Two seminars were conducted on the *Introduction to the World Trade Organization*, and on *Irrigation Development and Technology*.

SUCCESSES:

- AgTech carried out agriculture extension activities such as in the case of the drip irrigation activity and provided new field guides to farmers for pesticide application and fertilizer use.

- Following Project recommendations and extension activities, a total of 61 new greenhouses were constructed or improved in Year 4 throughout the Ahal, Balkan, Lebap and Mary regions. Thus, the Project surpassed its annual target of 50 greenhouses.

Horticulture Training

Project horticulture partners at a pesticide training in Q2

In order to increase sustainable practices, Year 4 marked a change in AgTech's strategy for the Horticulture component. The main focus has diverted from regional trainings to extension services and preparing project partners on becoming greenhouse trainers and extension specialists, along with fostering linkages between local growers and foreign suppliers.

As part of the Year 4 strategy, the Project conducted a

two-day training seminar on pesticide application and fertilizer utilization at the Project's office in Ashgabat. The seminar was led by the local pesticide consultant, assisted by the Project's local Private Sector Agribusiness Specialist. The participants included Project horticulture partners from all velayats. The event provided an opportunity for participants to discuss various topics including input supplies, import-export issues, the greenhouse vegetable market, government regulations on chemical and fertilizer supplies, as well as challenges in the input-supply market. Participants were provided with an updated list of permitted pesticides and fertilizers issued by the Plant Protection Department of the Ministry of Agriculture as well as with the pocket field guide on pesticide and fertilizer use and application developed by the Project. This reoccurring meeting, along with informational support provided to the horticulture partners by the Project, contributes to their extension skills and further expands the project's impact as partners continue to provide their services to a larger pool of greenhouse producers in their respective regions.

As part of continued support under this activity, AgTech also procured 100 sets of personal protective equipment (PPEs) for dissemination among greenhouse-growers, participants of project-held training sessions and long-term project collaborators. The intention was to create an incentive to attend these fertilizer safety trainings, while raising awareness about health and environmental impacts occurring as a result of such activities carried out by horticulture farmers and greenhouse producers. In collaboration with Project specialists and velayat horticulture partners, 20 greenhouse growers from each of Ahal, Mary, Lebap, Dashoguz velayats and 8 greenhouse farmers from Balkan velayat were selected as recipients of PPEs. The selection criteria for growers included: a) participation level of farmer in project-held seminars and trainings; b) year-by-year income increase as a result of adopting new technologies, following project recommendations and consultations, as well as; c) level of cooperation with the Project on monitoring and recording project targeted indicators and achievements within the horticulture component. The PPEs were distributed in time for the first growing season of 2014.

Additionally, AgTech's partner, Mr. Orazgeldiyev, successfully imported high quality tomato and cucumber seeds directly from the Dutch supplier, Rijk Zwaan, with minimal logistical support from AgTech. The Project assisted Mr. Orazgeldiyev with establishing regular contact with the Rijk Zwaan's representatives in Germany. As a result of these efforts, AgTech's partner is directly negotiating with the supplier for seed imports. Mr. Orazgeldiyev now produces more than 200,000 seedlings and supplies them to greenhouse producers in several neighboring counties. This is a great example of AgTech's success in forging relationships between the local growers and foreign suppliers which began in Y3. The linkages will support sustainable activities following the project's completion. Additionally, with marginal assistance from AgTech, Mr. Orazgeldiyev provides consultation services and advice to all his clients and farmers regarding fertilizer and pesticide application, growing techniques, and disease prevention measures.

CHALLENGES:

- Licensing rules and regulations in relation to vegetable seeds, pesticide and fertilizer imports remain to be the main challenge in domestic input supply market. The challenge to imports also impacts the local horticulture producers' ability to significantly increase vegetable production and meet the local market's demand for fresh vegetable products.

- Following requests from the MFA, AgTech has ceased field trips to regions and minimized direct interactions with farmers and growers. The Project is now acting as a liaison between the project horticulture partners and farmers, in order to provide them with the necessary technical and informational support.

SUCCESSES:

- As a result cooperation between project horticulture partners, in Year 4, the project has recorded that a total of 454 greenhouse farmers and producers have increased their yields from vegetable production by more than 50% compared to the previous season.

- In Year 4, AgTech's horticulture partner in the Ahal District, Charymyrat Orazgeldiyev, with assistance from the AgTech Project, has been working directly with Rijk Zwaan to import seeds to Turkmenistan. This collaboration between AgTech, a Global Supplier, and small farmers clearly demonstrates how the Project's strategy of functioning as a liaison has produced successful results and how its benefits will continue after the Project's completion.

- Mr. Orazgeldiyev produces more than 200,000 seedlings and supplies them to greenhouse producers

- The Project assisted Mr. Orazgeldiyev with establishing regular contact with the supplier's representatives in Germany. As a result of these efforts, AgTech's partner is negotiating directly with the supplier for the second batch of seed imports.

- 197% increase in value of production sold to local and international markets.

PROGRAM DEVELOPMENT AND SUPPLIMENTARY ACTIVITIES

Livestock Technical Assistance Program and Plans for Year 5

The Project is planning to translate short, best practice videos into Turkmen for production and distribution among project trained AI specialists and local livestock farmers. Currently, the field office staff is working with home office staff in Washington, D.C. to identify and select livestock farming and veterinary care videos for this purpose.

In response to the Central Lab's request to enhance the lab specialists' knowledge and skills, the Project plans to organize a study tour in year 5 to an OIE compliant laboratory for the State Veterinary Service specialists. By observing practices in compliant labs, the expectation is that specialists will be able to conduct additional animal disease tests that are required by the OIE standards upon their return and continue to train other lab specialists at the Central Lab.

CHALLENGES

- In order to find instructive videos, the project staff, in both the field and home office, has been contacting relevant organizations in AI willing to donate their instructional videos for dissemination to the farmers. Though videos have been obtained, translating the videos in to Turkmen has proven difficult.

SUCCESSES

- A study tour is planned to take place in Lithuania in November of Year 5. All approvals have been received and final details are being arranged.

Dr. Ward presenting at the Seminar for WTO SPS Measures

- The Agtech project is also planning a Livestock Development Conference for Year 4 in order to continue discussion between international experts, government officials and leading experts in Turkmenistan to achieve sustainable practices and comply with international standards.

Conferences and PR Events

Seminar on the WTO Sanitary and Phyto-Sanitary (SPS) Measures for MoA

At the end of March 2014, as part of MFA approved activities, AgTech conducted a seminar on the Sanitary and Phyto-Sanitary (SPS) measures that apply to the World Trade Organization (WTO). Participants of the training seminar included specialists of the Plant Protection and Quarantine Services of the Ministry of Agriculture (MoA), provincial representatives of these services, and representatives of the Ministry of Agriculture of Turkmenistan. Led by AgTech's short-term WTO SPS consultant Professor Gleyn Bledsoe, of the University of Idaho, USA, the seminar introduced participants to WTO regulations that guide food safety as well as animal and plant health. Participants were instructed on the key provisions of the WTO that related to agriculture and to the protection of fish, forests, wild flora and wild fauna. The discussion also focused on how countries develop their own sanitary and phyto-sanitary standards based on scientific recommendations and international best practices.

Seminar on Livestock Development for the Agriculture University and the SLU of Turkmenistan

In May, with support from the MFA and MoA, AgTech carried out a presentation and a seminar for the Agriculture University on the livestock sector development in Turkmenistan. The seminar provided an opportunity for industry representatives to discuss important issues related to the local livestock sector, and share knowledge on gaining state support, policies needed to increase domestic livestock production, and key sector recommendations. Participants in this event included specialists from the State Livestock Union of Turkmenistan and lecturers from the Livestock and Veterinary Departments of the State Agricultural University.

Seminar on the water saving irrigation technologies for the Agriculture University and the State Food Industry Union of Turkmenistan

Per MFA's recommendation, AgTech held a seminar for the Agriculture University and the State Food Industry Union of Turkmenistan in June. The seminar focused on water saving irrigation methods. With support from the MFA and the MoA of Turkmenistan, this seminar provided an opportunity for participants to discuss water conservation matters, agricultural irrigation, water management policies, regional issues, sector challenges and the irrigation infrastructure. Participants included specialists from the State Food Industry Union and the Ministry of Water Resources of Turkmenistan as well as academics from the Water Conservation Department of the S.A. Niyazov Turkmen Agricultural University.

Seminar on growing and maximizing the yields of forage crops for the Agriculture University and the Academy of Science of Turkmenistan

AgTech prepared a seminar for the Agriculture University and the Academy of Science of Turkmenistan on growing and increasing yields of forage crops in Turkmenistan. Topics such as cultivating high-value forage crops in Turkmenistan's unique climatic and soil conditions were highlighted. This seminar was designed to expand on the USAID-organized AI and livestock sector development seminars held over the last year, as part of the comprehensive effort to better enable Turkmenistan's agricultural sector maximize its meat and dairy production. The participants included specialists from the Academy of Science and academics from the Agronomy Department of the S.A. Niyazov Turkmen Agricultural University.

Seminar on the WTO Veterinary standards and measures for the MoA of Turkmenistan

In late June, AgTech completed the final part of the seminar devoted to World Trade Organization (WTO) accession issues related to animal health, trade of animal products, and food safety for the MFA. This seminar complimented the WTO SPS seminar held for the State Quarantine Service and Plant Protection Department of the Ministry of Agriculture of Turkmenistan in March 2014 and was one of several that USAID has organized with the Government of Turkmenistan in order to examine benefits and challenges of joining the WTO. Participants of this event included specialists from the State Veterinary Service, MoA, the S.A. Niyazov Turkmen Agricultural University, and the Academy of Sciences of Turkmenistan.

SUCCESSES

- • All seminars have successfully been held in collaboration with State Associations in Turkmenistan, such as the Ministry of Foreign Affairs, the State Livestock Union (SLU), Ministry of Agriculture, the Main Veterinary Service of Turkmenistan and included key stakeholders from the Turkmenmallory, the State Agricultural University, the Water Resources Ministry, the Food-processing Association of Turkmenistan, and the Academy of Sciences of Turkmenistan.

Training Database Development

The project developed M&E tools to collect information from training participants served as the foundation for the development of a database to use to report on key PMEP indicators and other baseline information that may be useful to USAID.

However, due to new MFA restriction on travel and monitoring and travel, as well as the remote and sparse location of many livestock households, documenting data including the number of project calves remains one of the main challenges. The challenge of poor records, if any, on increases in milk yields and income, as a result of increased use of AI services and improved breeds remains to be a problem.

COMPLIANCE WITH SECTION "IMPLEMENTATION PRINCIPLES AND KEY ISSUES

Anti-Corruption

As has been previously reported, importing equipment and materials into Turkmenistan requires many licenses and paperwork to move goods through customs successfully in a cost-effective manner. The project has been working to outline the process of importing agricultural input products so that current and future entrepreneurs and farmers in Turkmenistan will have a guide by which to operate within the law. The project's focus will not be on making any policy changes, but rather helping the local population and businesses adapt to the laws that govern in order that they may operate more efficiently and in a sustainable way.

Capacity Building of Local Staff and Sustainability

In Year 4, with home office project administrative support, the project appointed local COP, Farhat Orunov, has continued leading activities in the field. The home office has conducted four management visits to Turkmenistan to ensure compliance with USAID and FAR rules, requirements and procedures. AgTech also hired and trained new staff in Year 4 in order to support the increased project activity expected from the celling increase and project extension.

As mentioned in previous reports, sustainability of AgTech activities in Turkmenistan will only occur through a transfer of tangible goods, skills and knowledge that can allow for AI services, livestock development and greenhouse production to continue to improve for years to come. By procuring high-tech inputs and capital goods for the AI infrastructure and using a lead farmer model, the project has set a solid foundation for local farmers, veterinarians and businessmen to replicate project activities to continue economic growth in Turkmenistan's agriculture sector.

The project has been focusing on extension service activities, training seminars for state veterinarians and livestock experts in collaboration with Turkmen ministries and institutions, as well as a study tour on World Organization for Animal health(OIE) and World trade organization (WTO) international standards in Lithuania, not to mention a US based activity in California. All activities were carried out in order to build capacity and sustainable practices that would continue and have a positive impact following the project's closure.

Environmental Compliance Requirements

AgTech's Pesticide Evaluation Review and Safe Use Action Plan (PERSUAP) was submitted and approved in Year 2. Despite the insufficient and missing data, the project staff has been able to gather information necessary for completing the PERSUAP. The ER Checklist was used in conjunction with the Leopold Matrix by the Agreement/Cognizant Technical Officer (AOTR/COTR) to determine that the proposed Liquid Nitrogen Generator poses low environmental concern. The checklist will determine the scope and extent of additional environmental evaluation, mitigation, and monitoring necessary to fulfill federal U.S. environmental requirements.

AgTech procured and disseminate additional personal protection equipment (PPE) for farmers when using pesticides. Additionally, in Year 4 a pocket field guide with a list of permitted pesticides referred to in the PERSUAP was disseminated to greenhouse farmers. The project continues to provide access to liquid nitrogen and artificial insemination services via extension activities. The project completed environmental checklists and the activities qualify for categorical exclusion. The environmental checklists pertaining to the livestock and horticulture components are as follows:

Livestock	Horticulture
1. Liquid Nitrogen Generator (LNG) 2. Artificial Insemination (AI) Center Construction 3. Dewar Flasks 4. Feed Production 5. Artificial Insemination (AI) Activities	1. Soil Testing/Greenhouse production training 2. Drip Irrigation systems 3. Pest control measures and application of fertilizers 4. Construction of demonstration greenhouses 5. Personal Protective Equipment (PPE)

Food Security

Although food security is not a major focus for this agricultural project, the Balkan region in particular is susceptible to price shocks as this is the one region that has no greenhouse horticulture. Prices for fresh produce are always higher in this region, and the rural population has a lower level of income. The project

has been working on developing linkages between the Dutch seed supplier, "Rijk Zwaan" and project horticulture partners. Additionally, with project's support there are now 10 built and or reconstructed greenhouses in the Balkan region. The project also provided a seminar on forage crops, irrigation technologies and greenhouse best practices which provided opportunities to exchange ideas on agronomic techniques, plant protection and input supply possibilities to Turkmenistan.

Gender and Youth

As observed through the last four years of project activities, many of the farmers are men; however, women and children often help in planting and harvesting the crops, as well as milking and looking after the cattle. Without a formal training program, inclusion of more female beneficiaries becomes a challenge. In Year 4 the project has been focusing on extension activities and seminars based on government of Turkmenistan's request and restrictions on travel and monitoring activities. Nonethelessm, the Project has tried to ensure to the best of its abilities that third country trainings involved female beneficiaries and youth.

SUMMARY OF STAFFING MATTERS

The AgTech project has undergone some major staffing changes in the past year. First, following the additional funding received in Quarter Four of Year three and the increased level of work plan activity anticipated in Years Four and Five, AgTech hired an agricultural technical specialist, Ms. Nazik Taganova. In the second quarter, AgTech initially planned to hire an additional Administrative Assistant. However, given the increased level of activities and international consultancies as well as the need for English language support, the Project revised the position title to Project Technical Support Specialist. Mr. Atajan Nazhmetdinov was hired for this position at the beginning of February 2014. Finally, in the third quarter, the AgTech Home Office underwent staffing changes. Following Mr. Charles Yesolitis's departure, Ms. Elina Pavlova, the former Project Coordinator assumed Mr. Yesolitis's responsibilities of a Project Manager. Likewise, Ms. Ann Przybyl replaced Ms. Pavlova as the Project Coordinator and Jason Bohoney assumed the role of a Technical Manager in place of Wesley Weidemann. Finally, at the end of Quarter 4, Atajan Nazhmetdinov left the project and his position as Project technical Support Specialist.

CHEVRON FUNDED ACTIVITIES

LN GENERATOR

The Chevron funded liquid nitrogen generator (LNG) - procured from a US-based manufacturer Kelvin International Corporation in Year Two by AgTech - has been supplying project AI activities and beneficiaries through Q4 of Year Four. The LN activities have continued through Q4. To date, the project AI centers and project participants have received around 50 L of LN per month (see Annex 1B).

ATTACHMENTS:

Annex 1A PMEP Results

Annex 1B Data Tables

Annex 2 Disposition Inventory

Annex 3 List of Reports

Annex 4 Personnel Summary

Annex 5 Successes and Challenges